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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,744	08/30/2001	Yoshihiro Nakajima	Q64096	7388

7590

04/24/2002

SUGHRUE, MION, ZINN, MACPEAK & SEAS
2100 Pennsylvania Avenue, N.W.
Washington, DC 20037

EXAMINER

GREENE, PERSHELLE L

ART UNIT	PAPER NUMBER
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2826

DATE MAILED: 04/24/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/941,744

Applicant(s)

NAKAJIMA ET AL.

Examiner

Pershelle Greene

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 7-11, 13-16 and 18-20 is/are rejected.
- 7) ☒ Claim(s) 4-6, 12 and 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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Serial Number: 09/ 941744

Attorney's Docket #: Q64096

Filing Date: 08/30/2001; claimed foreign priority to 8/31/2000

Applicant: Nakajima et al.

Examiner: Pershelle Greene

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the through hole claimed in 11 and 16 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

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The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 11 and 16 are being rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The drawings do not indicate a through hole in the metal plate. Therefore it is not clear how the through hole should be applied to the metal plate and where the through hole should be positioned.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. In claim 8, it is unclear what is meant by “concave”. Concave is a term not commonly used in the semiconductor device technology. The term is more commonly used in optics. It is unclear if the applicant is referring to a stepped part.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 7, and 18 are being rejected under 35 U.S.C. 102(b) as being unpatentable by Williams et al. (U.S. Patent No. 6,307,755).

As to claim 1, Williams et al. discloses a semiconductor device having all of the claimed subject matter:

- A. “a semiconductor chip... of electrodes” is met by chip 462, shown in figure 19O;
- B. “wiring materials... lead terminals” is met by wire 480, shown in Figure 19P;
- C. “a metal plate connecting... of said metal plate” is met by the strap 480, shown in figure 19P;
- D. a molding resin... to said molding resin” is met by the encapsulant 482, shown in figure 19O.

As to claim 2, Williams et al. discloses a metal plate connecting with the plurality of electrodes and the plurality of lead terminals. The metal plate alone can represent the metal plate and the plating on the metal plate.

As to claim 3, Williams et al. discloses a metal plate having at least one bent part between the first and second portion. The metal plate that connects the second portion represents the plating formed on the first and second portion.

As to claim 7, Williams et al. discloses metal lead terminals.

As to claim 18, Williams et al. discloses a semiconductor device having all of the claimed subject matter:

- A. “a semiconductor chip... of electrodes” is met by chip 462, shown in figure 19O;
- B. “wiring materials... lead terminals” is met by wire 480, shown in figure 19P;

- C. “a metal plate connecting... of said lead terminals” is met by the strap 480, shown by figures 19O and 19P;
- D. “ a molding resin... to said molding resin” is met by the encapsulant 482, shown in figure 19O.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 8 is being rejected under 35 U.S.C. 103(a) as being unpatentable over Williams et al. (U.S. Patent No. 6,307,755), in view of Kuraishi et al. (U.S. Patent # 5,859,471).

Williams et al. discloses all of the claimed subject matter with the exception of the plurality of lead terminals having a concave in which the metal plate and the concave are connected via a conductive bonding material.

Kuraishi et al. teaches the use of a lead terminal 20 with a stepped portion 18 in which the metal plate 34 is connected with the stepped portion via a solder resist 22. It would have been obvious to one of ordinary skill in the art to have the stepped portion to provide for easier attachment.

5. Claim 9 is being rejected under 35 U.S.C. 103(a) as being unpatentable over Williams et al. (U.S. Patent No. 6,307,755), in view of Kuraishi et al. (U.S. Patent # 5,859,471), and further in view of Seki et al. (U.S. Patent # 6,165,819).

Claim 9 is being rejected for the same reasons as stated above in regards to claim 8.

However, these references do not teach the use of a roughened metal plate.

Seki et al. teaches the use of a metal plate with a roughened metal plate 255. The roughened surface allows you to remove any parts of the unwanted staked layer structure. Therefore, it would have been obvious to one of ordinary skill in the art to use a metal plate with a roughened surface.

6. Claim 10 is being rejected under 35 U.S.C. 103(a) as being unpatentable over Williams et al. (U.S. Patent No. 6,307,755), in view of Kuraishi et al. (U.S. Patent # 5,859,471), and further in view of Seki et al. (U.S. Patent # 6,165,819).

Claim 10 is being rejected for the same reasons as stated above in regards to claim 8.

However, these references do not teach the use of a dimpled metal plate.

Seki et al. teaches the use of a dimpled metal plate 16-1. The dimpling of the metal plate increases the surface area of the plate as well as facilitating the coating of an adhesive agent on the terminal. Therefore, it would have been obvious to one of ordinary skill in the art to dimple the metal plate

7. Claim 13 is being rejected under 35 U.S.C. 103(a) as being unpatentable over Williams et al. (U.S. Patent No. 6,307,755), in view of Seki et al. (U.S. Patent # 6,165,819).

Williams et al. discloses all of the claimed subject matter with the exception of the clawed parts.

Seki et al. teaches the use of clawed parts. The claw parts 19 provide support to the semiconductor device. It allows you the ability to mount the semiconductor device with increased reliability. The claw parts also reduces the cost of the device because there is not a

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need to form an independent part to form the claw part. Therefore, it would have been obvious to one of ordinary skill in the art to use leads with claw parts.

8. Claim 14 is being rejected under 35 U.S.C. 103(a) as being unpatentable over Williams et al. (U.S. Patent No. 6,307,755), in view of Seki et al. (U.S. Patent # 6,165,819).

Claim 14 is being rejected for the same reasons as stated above in regards to claim 13. In addition, Seki et al. teaches the use of a metal plate with a roughened metal plate 255. The roughened surface allows you to remove any parts of the unwanted staked layer structure. Therefore, it would have been obvious to one of ordinary skill in the art to use a metal plate with a roughened surface.

9. Claim 15 is being rejected under 35 U.S.C. 103(a) as being unpatentable over Williams et al. (U.S. Patent No. 6,307,755), in view of Seki et al. (U.S. Patent # 6,165,819).

Williams et al. discloses all of the claimed subject matter with the exception of the clawed parts and the dimpled metal plate.

Seki et al. teaches the use of clawed parts and the use of a dimpled metal plate 16-1. The dimpling of the metal plate increases the surface area of the plate as well as facilitating the coating of an adhesive agent on the terminal. Therefore, it would have been obvious to one of ordinary skill in the art to dimple the metal plate.

10. Claim 19 is being rejected under 35 U.S.C. 103(a) as being unpatentable over Williams et al. (U.S. Patent No. 6,307,755), in view of Seki et al. (U.S. Patent # 6,165,819).

Claim 19 is being rejected for the same reasons as stated above in regards to claim 18. In addition, Seki et al. teaches the use of a metal plate with a roughened metal plate 255. The roughened surface allows you to remove any parts of the unwanted staked layer structure.

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Therefore, it would have been obvious to one of ordinary skill in the art to use a metal plate with a roughened surface.

11. Claim 20 is being rejected under 35 U.S.C. 103(a) as being unpatentable over Williams et al. (U.S. Patent No. 6,307,755), in view of Seki et al. (U.S. Patent # 6,165,819).

Williams et al. discloses all of the claimed subject matter with the exception of the dimpled metal plate.

Seki et al. teaches the use of a dimpled metal plate 16-1. The dimpling of the metal plate increases the surface area of the plate as well as facilitating the coating of an adhesive agent on the terminal. Therefore, it would have been obvious to one of ordinary skill in the art to dimple the metal plate.

Allowable Subject Matter

12. Claims 4-6, 12, and 17 are being objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pershelle Greene whose telephone number is 703-305-3870. The examiner can normally be reached on M-F 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on 703-308-6601. The fax phone numbers for the

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organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

PLG

April 19, 2002



NATHAN J. FLYNN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800